

## **Amendments to the Claims:**

This following listing of claims will replace all prior versions, and listings, of claims in the application.

### **Listing of Claims:**

1. (currently amended) A device system for computing circuit paths between a first node and a second node within a network, the network including a plurality of elements, the device system having at least one computer-readable medium storing computer-executable instructions and comprising:

computer code when executed creates a first set of computer-executable instructions creating a primary circuit path from the first node to the second node, the primary circuit path including a first at least one protected link selected from the plurality of elements, wherein the software code arranged to create the primary circuit path first set of computer-executable instructions is arranged to include the at least one protected link in a protectable segment of the primary circuit path; and

computer code when executed creates a second set of computer-executable instructions creating an alternate circuit path from the first node to the second node, wherein the alternate circuit path is arranged to protect at least the protectable segment of the primary circuit path; and a medium which stores the computer codes.

2. (currently amended) The device system as recited in claim 1 wherein the at least one protected link is a link with 1+1 protection.

3. (currently amended) The device system as recited in claim 1 wherein the software code arranged to create the alternate circuit path includes software code second set of computer-executable instructions is arranged to create the alternate circuit path using the at least one protected link.

4. (currently amended) The device system as recited in claim 3 wherein the at least one protected link is a link with 1+1 protection.

5. (currently amended) The device system as recited in claim 1 further including software code a third set of computer-executable instructions which enable at least one element of the plurality of elements which is required in the alternate circuit path to be substantially specified, wherein the software code arranged to create an alternate circuit path are the second set of computer-executable instructions is arranged to create the alternate circuit path using at least one element of the plurality of elements which is required.

6. (currently amended) The device system as recited in claim 5 wherein at least one element of the plurality of elements which is required in the alternate circuit path is a third node which is associated with a beginning of the at least one protected link and a fourth node which is associated with the end of the at least one protected link.

7. (currently amended) The device system as recited in claim 1 wherein the device system is associated with the first node.

8. (currently amended) The device system as recited in claim 1 further including software code devices a fourth set of computer-executable instructions arranged to implement the primary circuit path and the alternate circuit path.

9. (currently amended) The device system as recited in claim 1 wherein the primary circuit path is a lowest cost circuit path between the first node and the second node and the alternate circuit path is a lowest cost circuit path between the first node and the second node which protects the primary circuit path.

10. (currently amended) The device system of claim 1 wherein the software code arranged to create the alternate circuit path between the first node and the second node second set of computer-executable instructions include:

software code for a first subset of computer-executable instructions assigning a cost to at least one protected link;

software code for a second subset of computer-executable instruction assigning costs associated to each link of a plurality of links included in the plurality of elements, wherein the

cost assigned to the at least one protected link is substantially lower than the costs associated with each link of the plurality of links; and

software code for a third subset of computer-executable instruction considering costs associated with the plurality of links and the cost associated with the at least one protected link to determine the alternate circuit path.

11. (previously presented) A method for computing an overall circuit path within a network, the overall circuit path including a primary path and an alternate path, the primary path being defined from a start node to a destination node, the method comprising:

determining the primary path using a routing algorithm, wherein the primary path includes a protectable segment which has a first line-protected link; and

creating the alternate path using the routing algorithm, wherein creating the alternate path includes creating the alternate path from the start node to the end node such that the alternate path is arranged to protect at least the protectable segment which includes the first line-protected link.

12. (original) The method of claim 11 wherein the protectable segment is a path-protected segment that includes the first line-protected link and the alternate path is arranged to protect the path-protected segment.

13. (original) The method of claim 11 wherein creating the alternate path using the routing algorithm further includes creating the alternate path such that the alternate path includes the first line-protected link.

14. (original) The method of claim 13 further including:

specifying that a first node associated with the start of the first line-protected link and a second node associated with the end of the first line-protected link are included in the alternate path.

15. (original) The method of claim 11 wherein the primary path is the shortest path between the start node and the destination node.

16. (original) The method of claim 11 wherein the primary path is the lowest cost path between the start node and the destination node.

17. (original) The method of claim 16 wherein creating the alternate path using the routing algorithm includes considering costs associated with a plurality of links associated with the network and a cost associated with the first line-protected link, the cost associated with the first line-protected link being substantially lower than the costs associated with the plurality of links.

18. (original) The method of claim 11 wherein the overall circuit path is a unidirectional path-switched ring.

19. (currently amended) A method for computing an overall circuit path within a network, the overall circuit path including a primary path segment and an alternate path segment, the primary path segment being defined from a start node to a destination node, the method comprising;

determining the primary path segment to include at least one line-protected link between the start node and the destination node; and

determining the alternate path segment to substantially start at the start node and end at the destination node, wherein the alternate path segment is arranged to protect the primary path segment that includes the at least one line-protected link.

20. (currently amended) The method of claim 19 wherein the alternate path segment includes the at least one line-protected link.

21. (original) The method of claim 19 wherein the overall circuit path is a unidirectional path-switched ring.

22. (currently amended) The method of claim 19 wherein the at least one line-protected link is arranged between a first node and a second node, and wherein the alternate path segment

is not switched through the first node or the second node.

23. (original) The method of claim 19 wherein the primary path segment is a lowest cost path segment between the start node and the destination node.

24. (currently amended) A device system for computing an overall circuit path within a network, the overall circuit path including a primary path segment and an alternate path segment, the primary path segment being defined from a start node to a destination node, the device system having at least one computer-readable medium storing computer-executable instructions and comprising:

computer code for a first set of computer-executable instructions determining the primary path segment to include at least one line-protected link from the start node to the destination node; and

computer code for a second set of computer-executable instructions determining the alternate path segment to substantially start at the start node and end at the destination node, wherein the alternate path segment is arranged to protect the primary path segment that includes the at least one line-protected link; and

a medium that stores the software code.

25. (currently amended) The device system of claim 24 wherein the alternate path segment includes the at least one line-protected link.

26. (currently amended) The device system of claim 24 wherein the overall circuit path is a unidirectional path-switched ring.

27. (currently amended) The device system of claim 24 wherein the at least one line-protected link is arranged between a first node and a second node, and wherein the alternate path segment is not switched through the first node or the second node.

28. (currently amended) A device system for computing circuit paths from a first node to a second node within a network, the network including a plurality of elements, the device system

including at least one computer-readable medium storing computer-executable instructions and comprising:

**computer code** a first set of computer-executable instructions arranged to enable a determination to be made regarding whether at least one protected link selected from the plurality of elements may be included in a protectable segment of a primary path;

**computer code** a second set of computer-executable instructions arranged to create a primary circuit path from the first node to the second node which includes at least one protected link when it is determined that at least one protected link may be included in the protectable segment of the primary path, wherein the **code arranged to create the primary circuit path** second set of computer-executable instructions is arranged to include at least one protected link in the protectable segment of the primary circuit path;

**computer code** a third set of computer-executable instructions arranged to create an alternate circuit path from the first node to the second node when it is determined that at least one protected link may be included in the protectable segment of the primary path, wherein the alternate circuit path is arranged to protect at least the protectable segment of the primary circuit path; **and**

**a medium which stores the code devices.**

29. (currently amended) The **device system** as recited in claim 28 wherein the at least one protected link is a link with 1+1 protection.

30. (currently amended) The **device system** as recited in claim 28 wherein the **computer code arranged to create the alternate circuit path includes computer code** the third set of computer-executable instructions is arranged to create the alternate circuit path using the at least one protected link.

31. (currently amended) The **device system** as recited in claim 28 further including:

**computer code** a fourth set of computer-executable instructions arranged to create a primary circuit path between the first node and the second node which does not include at least one protected link when it is determined that at least one protected link may not be included in the protectable segment of the primary path; and

**computer code** a fifth set of computer-executable instructions arranged to create an alternate circuit path between the first node and the second node, wherein the alternate circuit path is arranged to protect the primary circuit path.